

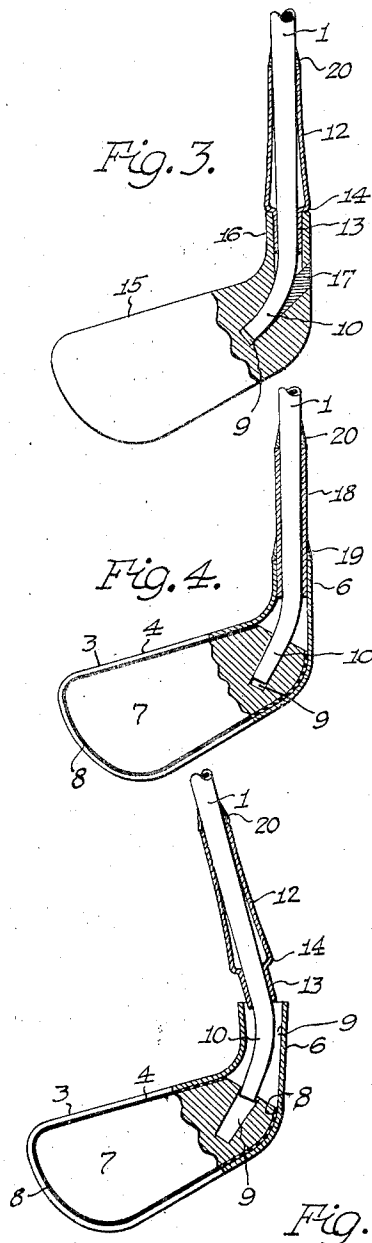
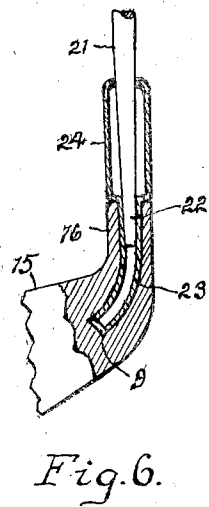
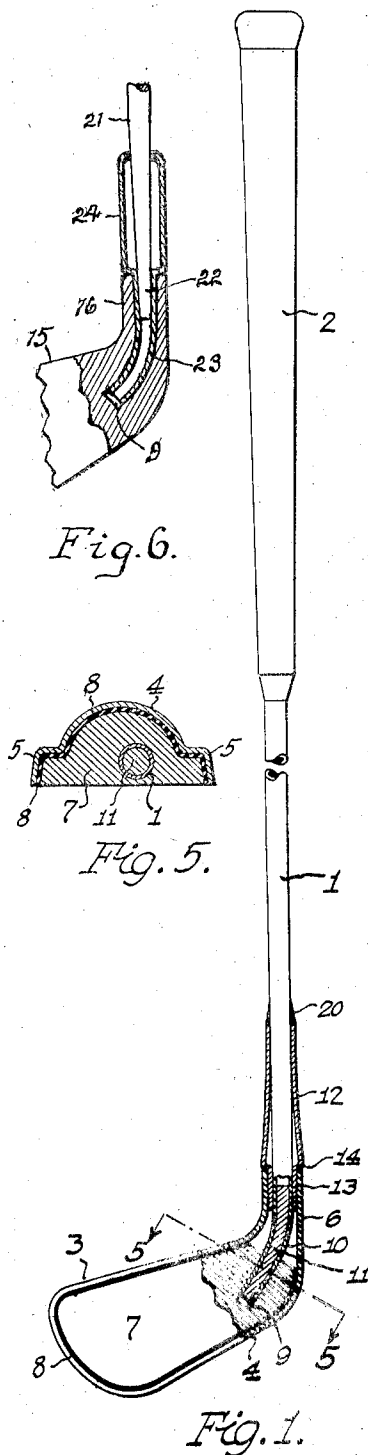
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HEAD AND SHAFT ASSEMBLY FOR GOLF CLUBS

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## HEAD AND SHAFT ASSEMBLY FOR GOLF CLUBS

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2 Claims. (Cl. 273—80)

This invention relates to improvements in golf clubs and more particularly to a head and shaft assembly for such clubs.

An object of the present invention is to provide a construction wherein the club head is so attached to the club shaft as to provide a very strong and rigid connection between the two parts and prevent breakage. A further object is to provide a connection of the club head to the shaft which is such as to prevent the twisting or turning of the head relative to the shaft in the use of the club, and which will greatly strengthen the shoulder of the connection and facilitate the connecting of the head to the shaft in the manufacture of the club, thus cheapening the cost of such manufacture. It is also an object to provide a construction wherein the minimum length of hosel or tubular extension on the club head to receive the lower end of the shaft, is provided, thus permitting the shaft to spring or yield, at a point nearer the head, thereby promoting the "follow through" action of the club in use; and also to provide a construction wherein the attached end of the shaft is extended to adjacent the lower edge of the head, thereby giving a more substantial "feel" and action to the club in the hands of the player.

With the above and other ends in view, the invention is comprised in the matters hereinafter set forth and more particularly pointed out in the appended claims, reference being had to the accompanying drawing, wherein

Figure 1 is a side elevation of a golf club with a portion of the head and lower end of the shaft and also the means for connecting said end to said head, shown in section;

Fig. 2 is a view, largely in section, illustrative of the manner of assembling the shaft and head;

Fig. 3 is a detail, largely in section, of an assembled shaft and head, and illustrative of a modified construction;

Fig. 4 is a view similar to that of Figure 3, illustrative of a further modified construction;

Fig. 5 is a transverse section substantially upon the line 5—5 of Figure 1; and

Fig. 6 is a sectional detail similar to that of Fig. 3 and showing a further modification.

Referring more particularly to the construction shown in Figures 1, 2 and 5, the numeral 1 indicates a tubular club shaft having the usual grip or handle portion 2 on its upper end, and 3 indicates the club head as a whole, which head includes an outer sheet metal shell 4 of substantially concavo-convex shape in cross section as shown in Figure 5, said shell being formed with

side and end channel portions or extensions 5, and with an integral, tubular end extension or hosel 6 adapted to receive the lower end portion of the shaft 1 therein and attach said shaft to said shell in the manner hereinafter set forth.

Fitting within the hollow shell 4 is a weight block 7 which is pre-formed or cast and of a shape to substantially fill the shell up to the point where the hosel 6 merges into the shell, with its flat side or face, which forms the ball engaging face of the head, flush with the side and end edge of the shell. This block is secured within said shell by interposing a sheet 8 of rubber or other suitable resilient material, between the inner surface of the shell and the adjacent surface of the block, and then vulcanizing or otherwise firmly attaching this sheet to the opposed surfaces of block and shell. This vulcanized sheet material 8 thus not only serves to secure the weight block within the shell, but also serves as a cushion, due to its resiliency, to cushion the blow when the club head strikes the ball and dampen the vibrations set up by the blow, so that they will be transmitted to a lesser degree, to the shell and thence through the club shaft to the hands of the player.

The lower end of the shaft is connected directly to the end of the weight block 7 adjacent the lower end of the hosel 6, by forming a bore 9 in said end of the block, which bore extends inwardly of the block at an angle to the axis of the club shaft 1, and the lower end portion 10 of this shaft is bent laterally at a similar angle and inserted endwise through the hosel and forced into said bore which may be tapered inwardly from its outer end as shown in Figure 2 so as to tightly receive and securely hold the shaft end. In order that said tubular shaft may be so bent without danger of collapsing or breaking it, an insert 11 of soft or readily bendable metal, may be inserted in the lower end of the tubular shaft before bending, to fit closely therein and prevent collapse of the tube when it is bent and also to strengthen said end portion and add weight thereto. When the club head and shaft are so assembled, the head is prevented from swinging or rotating upon the shaft relative thereto, by the bent lower end portion 10 extending into the block of the head at an angle to the axis of the shaft.

In order to add support or strength to the shaft 1 for a distance upwardly from the upper end of the hosel 6, a sleeve member 12 is provided, this sleeve being formed of a diameter for a distance upwardly from its lower end, as at 13, to fit the shaft closely and is then expanded

to form an annular shoulder 14 adapted to seat upon the upper end of the hosel when the shaft is assembled in the head as shown in Figure 1, with the portion 13 of the sleeve extending into the upper end of the hosel. From the shoulder 14 upwardly, this sleeve is tapered, gradually coming to the diameter of the shaft adjacent its upper end, so that it is spaced from the shaft intermediate said shoulder and the upper end portion of the sleeve. This sleeve thus forms a brace or support for the shaft adjacent the upper end of the sleeve and its lower end is rigidly secured within the hosel. The shaft is thus free to flex within the sleeve and near the upper end of the hosel, and yet is braced by said sleeve at a considerable distance upwardly from the hosel.

As illustrated in Figure 2, in the formation of the shell 4 and hosel 6, the hosel is made of an enlarged diameter to facilitate the insertion of the bent end portion 10 of the shaft therethrough and also the ready insertion of the end portion 13 of the sleeve 12, therinto, and after such insertion, this tubular end of the hosel is contracted into firm contact with said end portion of the sleeve to firmly hold the parts in place, and may be otherwise secured together, if found desirable.

In the construction shown in Figure 3, the club head 15 is a single solid casting formed with an integral hosel 16 to receive the shaft 1 and the tubular end portion 13 of the sleeve 12. In order to form the bore in the head at the lower end of the hosel bore, a hole is bored through the end of the head at an angle, and after the shaft is inserted in place, the outer end of this hole is closed by a plug 17, the hole also serving before it is closed, to permit the insertion of a tool for bending and directing the lower end of the shaft into the inner end of the hole.

In the construction shown in Figure 4, the club head is shown as constructed substantially the same as shown in Figures 1 and 2, but the sleeve 18 on the shaft 1, which sleeve extends into the upper end of the hosel 6, fits said shaft throughout the length of the sleeve and strengthens the shaft and hosel.

In the construction shown in Fig. 6, the shaft 21 is straight with its lower end 22 tapered and fitted closely within a tubular extension 23 of the lower end of the sleeve 24 which corresponds to the sleeve 12, this tube 23 forming an extension of the lower end of said shaft into which extension the tapered end 22 of said shaft fits closely within the hosel 16 of the solid head 15, this tubular extension being extended into the bore 9 to near the inner end thereof and bent laterally to conform to the bend of said bore, and if found desirable this bent end 23 may be filled with a filler similar to that shown at 11 in Fig. 1, to prevent collapse of the tube in bending. This sleeve 24 is preferably enlarged in diameter immediately above the upper end of the hosel 16, forming a shoulder to engage said end, and said bore is contracted at its upper end to the diameter of the shaft, to engage the same, and to form a brace for said shaft at a distance above the upper end of the hosel. This sleeve therefore not only serves a purpose similar to

that of the sleeve 12, but also forms a tubular extension for the shaft for extending into the bore in the head and firmly attaching the shaft to the head.

In all the constructions shown, the lower end portion of the club shaft or an extension thereof, is bent laterally and engages within a bore in the head, thus preventing twisting of the head relative to the shaft, and in Figures 1, 2 and 3 the shoulder 14 engaging the upper end of the hosel covers said end, making a smooth finish, but in Figure 4, an externally and upwardly tapered short sleeve member 19 is sleeved over the sleeve 18 with its lower end seated upon the upper end of the hosel to make a smooth exterior finish, and in all constructions except that shown in Fig. 6, a similar tapered sleeve member 20 is sleeved upon the shaft and seated upon the upper end of the sleeve on the shaft to cover said end and provide a finish, no such sleeve being necessary where the upper end of the sleeve is contracted, as shown in Fig. 6.

Obviously other changes may be made in the construction, arrangement and combination of parts without departing from the spirit of the invention, and such changes are contemplated.

Having thus fully described my invention, what I claim is:

1. A golf club of the blade type comprising a shaft having a laterally bent tubular lower end portion, a head including a shell formed of sheet metal with an upwardly extending tubular hosel and a weight block fitted within said shell and formed with a tapered bore extending inwardly of said block from the lower end of said hosel to frictionally and tightly receive the bent end portion of said shaft inserted through said hosel, a sheet of resilient material interposed between said shell and block, and a tubular extension for said hosel sleeved upon said shaft and formed with a lower end portion fitting said shaft and engaged within said hosel, said tubular extension being expanded to form an annular shoulder to engage the upper end of said hosel and with a contracted upper end portion to fit said shaft, said extension being spaced from said shaft intermediate said shoulder and the contracted upper end portion of said member whereby said shaft is rigidly connected to said weight block within said shell and said shell is yieldingly supported thereby and by said shaft to deaden vibration set up by said block coming into contact with a ball.

2. A golf club of the blade type comprising a sheet metal shell of substantially concavo-convex shape in cross section formed with marginal channel portions and an end extension forming a hosel, a weight block formed to fit within said shell with a convex rear side to add weight and with marginal portions to fit within the channel of the shell, said block being formed at its end opposite the inner end of the hosel with a bore, a sheet of resilient material interposed between said block and shell, a shaft having its lower end inserted within said bore in said block and secured therein, and resilient means for connecting the upper end of said hosel with said shaft.

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